



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,205	02/17/2004	Arthur Berman	356508.01801	1947

7590 05/26/2005

John W. Carpenter
Reed Smith LLP
P.O. Box 7936
San Francisco, CA 94120-7936

EXAMINER

TRA, TUYEN Q

ART UNIT PAPER NUMBER

2873

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/781,205

Applicant(s)

BERMAN, ARTHUR

Examiner

Tuyen Q. Tra

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 12-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,12-17,22-25 and 28-46 is/are rejected.
- 7) ☒ Claim(s) 2,3,18-21,26 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference signs mentioned in the description: Referent numbers "200", "205" and "215" could not be found in any drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 5, 32-37 and 39-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizuguchi et al. (U.S. Pat. 5,548,349 A).

Art Unit: 2873

- a) With respect to claim 1, Mizuguchi et al. discloses lateral color compensation for projection displays a light modulator (item 14, Fig. 2B); and a lens array (item 6, Fig. 2B) configured to focus light on high contrast portions (i.e. a central area of each pixel 15G as defined by applicant in specification) of the light modulator (14).
- b) With respect to claims 4 and 5, Mizuguchi et al. further discloses wherein the light modulator comprises a reflective microdisplay (15); wherein the reflective microdisplay comprises a Lcos microdisplay.
- c) With respect to claims 32-35, Mizuguchi et al. discloses a microdisplay comprising a set of pixels (item 14), each pixel (item 15) inherently comprising a first region and a second region where the first region has higher contrast compared to the second region; a lens array (item 6) comprising a series of lenses (item 6a), each lens corresponding on a one-to-one basis to a respective one of the microdisplay pixels (15); wherein the first regions comprise non-perimeter portions of the pixels; wherein the second regions comprise the perimeters of the pixels; wherein the microdisplay comprising a reflective LCOS microdisplay installed in a projection system.
- d) With respect to claims 36, 37 and 39-41, Mizuguchi et al. discloses a light modulator comprising a modulation surface divided into a set of modulation surface areas, each modulation surface inherently area comprising a first high contrast region and a second low contrast region; a lens array (item 6) comprising a set of lenses (6), each lens (item 6a) corresponding on a one-to-one basis to a respective one of the modulation surface areas; wherein each lens (6a) is configured to focus light only on the first high contrast region of its corresponding modulation surface area; wherein each

Art Unit: 2873

modulation surface area comprises a pixel and the high contrast region comprises a high contrast region of the pixel; wherein each first high contrast region does not include perimeter portions of its modulation surface area; wherein each second low contrast region is only a perimeter portion of its modulation surface area; wherein the light modulator is a LCoS microdisplay installed in a projection device.

e) With respect to claims 42-44, Mizuguchi et al. discloses a set of microdisplays (item 16, Fig. 2B) configured to individually modulate three color light beams that comprise an image to be projected from the projector; a set of lens arrays (item 6, Fig. 2B), each lens array matched to a respective microdisplay of the set of microdisplays; and each lens array (6) is configured to focus light on high contrast portions (i.e. a central area of each pixel 15G as defined by applicant in specification) of its respective microdisplay; wherein the high contrast portions of each microdisplay comprise non-perimeter portions of pixels of the microdisplay; wherein the high contrast portion of each microdisplay comprises pixels of the microdisplay excluding the perimeter portions of the pixels of the microdisplay, wherein microdisplays comprise LCoS microdisplays.

f) With respect to claims 45-46, Mizuguchi et al. discloses a set of microdisplays (item 16, Fig. 2B) a light modulator comprising a set of pixels configured to modulate light on a pixel-by-pixel basis; a lens array (item 6) comprising a set of lenses (6b), each lens (item 6b, Fig. 2B) corresponding on a one-to-one basis to each of the pixels (16); wherein each pixel (16) inherently includes a high contrast region and a low contrast region; and each lens (6b) is configured to direct more light to the high contrast region

Art Unit: 2873

of its corresponding pixel than the low contrast region wherein the light modulator is a LCOS microdisplay.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12-17, 22-25, 28-31 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Yajima (US Patent 6,669,345 B2), in view of Mizuguchi et al. (U.S. Pat. 5,548,349 A).

a) With respect to claims 12 and 38, Yajima discloses image display apparatus in Figure 1 comprising of a prism assembly (item 61) comprising a set of processing faces (4 faces around prism) and a set of optical components (beam splitter within prism, not numbered) configured to separate light from the light source (item 10) into a set of component light beams (as shown 2 components of light beam) and individually direct each component light beam to one of the processing faces (where the reflective LCD (51) contact with prism) ; a reflective microdisplay (51, also shown details in Fig. 1) mounted on one faces. However, Yajima does not disclose a lens array configured to focus beams of light individually on individual high contrast portions of the microdisplay. Within the same field of endeavor, Mizuguchi et al. discloses a transmission type color liquid display apparatus a lens array (item 6, Fig. 2B) configured to focus light on high

contrast portions (i.e. a central area of each pixel 15G as defined by applicant in specification) of the light modulator (14).

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the LCD apparatus with prism assembly comprising a set of modulation face such as disclosed by Yajima, and with a lens array (item 6, Fig. 2B) configured to focus light on high contrast portions of the light modulator such as discloses by Mizuguchi et al., for purpose of refracting or dispersing a beam of light.

- b) With respect to claim 13, Mizuguchi et al. further discloses wherein the lens array comprises an array of convex lenses (see Fig. 15).
- c) With respect to claim 22, Mizuguchi et al. discloses image display apparatus and method thereof in Figure 15 comprising of step for focusing individual light beams on high contrast portions of a light modulator (item 41); and individually modulating each of the light beams via the high contrast portion of the light modulator upon which they are focused.
- d) With respect to claims 14-17, 24 and 25, Mizuguchi et al. further discloses wherein the lens array comprises a flat plate of glass (opposite to peak 45) having a series of peaks (45), each peak corresponding to one of the high contrast portions of the microdisplay (42); wherein one high contrast portion comprises a group of pixels of the microdisplay (41); wherein one high contrast portion comprises a pixel (42) of the microdisplay; wherein each high contrast portion of the microdisplay comprises a high contrast portion of a pixel of the microdisplay.

Art Unit: 2873

- e) With respect to claim 23, Mizuguchi et al. further discloses wherein the light modulator comprises a reflective LCOS microdisplay (paragraph [0109]).
- f) With respect to claim 28, Yajima discloses image display apparatus in Figure 15 and 23 comprising of a light source (item 11); a projection lens (item 71); a display screen (item S); a prism assembly (item 85) comprising a set of processing faces (4 faces around prism) and a set of optical components (beam splitter within prism, not numbered) configured to separate light from the light source (81) into a set of component light beams and individually direct each component light beam to one of the processing faces (where the reflective LCD (41) contact with prism); and a LCOS microdisplay package (item 84) mounted to each processing face; wherein each microdisplay package (84) comprises a reflective LCOS (item 41, Fig. 15) microdisplay and; the prism assembly (85) is further configured to recombine light reflected from the processing faces and output the recombined light to the projection lens; and the projection lens (86) is configured to project the recombined light onto the display screen (87, Fig. 23).

However, Yajima does not disclose a lens array configured to individually focus beams of light on a one-to-one basis onto high contrast portions of the microdisplay. Within the same field of endeavor, Mizuguchi et al. discloses a transmission type color liquid display apparatus a lens array (item 6, Fig. 2B) configured to focus light on high contrast portions (i.e. a central area of each pixel 15G as defined by applicant in specification) of the light modulator (14).

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the LCD apparatus with prism assembly comprising a set of modulation face such as disclosed by Yajima, and with a transmission type color liquid display apparatus a lens array configured to focus light on high contrast portions of the light modulator (14) such as discloses by Muzuguchi et al., for purpose of refracting or dispersing a beam of light.

g) With respect to claim 29, Mizuguchi et al. discloses image display apparatus in Figure 15 and 23 comprising of a light source (item 81); a projection lens (item 86); a prism assembly (item 85) comprising a set of processing faces (4 faces around prism) and a set of optical components (beam splitter within prism, not numbered) configured to separate light from the light source (81) into a set of component light beams and individually direct each component light beam to one of the processing faces (where the reflective LCD (41) contact with prism) and recombine light reflected from the processing faces and output the recombined light to the projection lens (item 86); and a modulation package comprises a light modulator (item 42, Fig. 15) and a lens array (item 45, Fig. 15) configured to focus beams of light individually on individual high contrast portions of the light modulator (42).

h) With respect to claim 30 and 31, Mizuguchi et al. further discloses wherein the projector in Fig.1 is installed in a television; wherein the light modulators comprise reflective Lcos microdisplay.

7. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuguchi et al. (U.S. Pat. 5,548,349 A).

Art Unit: 2873

a) With respect to claim 6, Mizuguchi et al. discloses image display apparatus and method thereof in Figure 15 comprising of a lens array (item 45), comprising a series of lenses arrayed in circular pattern, wherein each lens (45) is of lenses arrayed in configured to individually correspond to a high contrast area of a light modulator (item 42). However, Mizuguchi et al. does not disclose a series of lenses arrayed in a rectangular pattern.

Since both circular pattern of lenses array and rectangular pattern of lenses array have the same function to focus light into LCD device, the selection of rectangular ones in place of circular one is seem as design experience upon the environment of use to ensure optimum performance. Therefore, it would have been obvious at the time the invention was made to a person having skill in the art to replace the rectangular lenses array in optical system with rectangular lenses array for purpose of lowing manufacturing cost.

b) With respect to claims 7 and 8, Mizuguchi et al. further discloses wherein the light modulator comprises a reflective LCOS microdisplay; wherein each individual high contrast area comprises a high contrast area of a pixel of the LCOS microdisplay.

Allowable Subject Matter

8. Claims 2, 3, 18-21, 26 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for the indication of allowable subject matter is that (claims 2, 26) the high contrast portions comprise non-perimeter portions of groups of pixels of the light

Art Unit: 2873

modulator; (claims 3, 27) the high contrast portions comprise non-perimeter portions of individual pixels of the light modulator; (claim 18) wherein each high contrast portion of the microdisplay comprises section of a non-parameter section of a pixel of the microdisplay; (claim 19) wherein each lens of the lens array comprises a stack of transparent layers disclosed in the claims is not found in the prior art.

RESPONSE TO APPLICANT 'S ARGUMENT

With respect to claim 1, Applicants discloses an apparatus comprising of a lens array and a light modulator having high contrast portion and further "configuring to focus light on the high contrast portion". It should be noted that method of "configuring to focus light on the high contrast portion of the modulator" is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ogawa (US 6,195,143 B1) discloses a liquid crystal panel structure with micro-lens array and projector using the micro-lens array with teaching of microlens (1030) one-to-one matching with electrode pixels (1023).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Tra whose telephone number is (571) 272-2343. The examiner can normally be reached on Monday to Thursday from 8:30am to 6:00pm.

Art Unit: 2873

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps, can be reached on (571) 272 - 2328. The fax number for this Group is (703) 872-9306.

tt

May 21, 2005


Hung Xuan Dang
Primary Examiner